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10/667,901	09/23/2003	Joseph Cargnelli	9351-244	8648

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EXAMINER	
ALEJANDRO, RAYMOND	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/667,901	CARGNELLI ET AL.	
	Examiner	Art Unit	
	Raymond Alejandro	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-7 and 9-20* is/are pending in the application.

4a) Of the above claim(s) *17-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-7 and 9-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/30/06 has been entered.

This office action is responsive to the amendment filed in connection with the foregoing RCE. Applicant has overcome the objection and the 35 USC 112 rejections. However, none of the prior art references has been satisfactorily overcome. Refer to the abovementioned amendment for substance of applicant's rebuttal arguments and remarks. Therefore, the present claims are finally rejected over the same applied art as set forth hereinbelow and for the reasons of record:

Election/Restrictions

1. The restriction requirement by original presentation applied to claims 11-16 is withdrawn in view of applicant's amendment to claims 11-16 and applicant's persuasive arguments concerning the scope of said claims. Claims 11-16 are hereby rejoined for purposes of prosecution.

2. However, claims 17-20 are *still* directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: claims 17-20 are directed to a fuel cell system including specific recirculation loops. Given that pending claims 1-2, 4-7 and 9-10 expressly require no recirculation loop at all and/or equipment associated with the recited

recirculation loop of independent claim 17, it is contended that claims 17-20 as mentioned above represent a different mutually exclusive embodiment of such a fuel cell system and its operating method. By the very same nature of the subject matter of claims 1-2, 4-7 and 9-10 not including a recirculation loop, it is contended that they both represent embodiments that do not overlap in scope. In view of applicant's admission that: "*New claims 17-20 are directed to other aspects of the invention, namely details of recirculation of the reactants and coolant circuits*" (See page 21 of the amendment dated 05/19/06), the examiner further contends that these claims also represent a different fuel cell embodiment which is mutually exclusive from the embodiment of pending claims 1-2, 4-7 and 9-10.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 11-20 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-2, 4, 6-7, 9 and 11-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Blum et al 2005/0008905.

The present claims are directed to a fuel cell system and method of operating the same wherein the disclosed inventive concept comprises the specific controlling of operation characteristics of the fuel cell system.

Regarding claims 1, 6, 11 and 15-16:

Blum et al disclose a method and apparatus for regulating electrical power output of a fuel cell system (TITLE/ABSTRACT). The fuel cell system also contains a controller to set the mass flow of the supply fuel and the mass flow of the oxidant stream to the fuel processing system; wherein the mass flow of the hydrogen-rich gas can be set in dependence on the dynamic response of the system (ABSTRACT). The fuel cell to supply power to the electrical load is disclosed (P. 0030). In this case, the fuel cell peripheral is the reactant supply line (P. 0028).

It is disclosed that the controller controls the system based upon or using measured values or calculated values of the mass flow of the hydrogen rich-gas (P. 0032). Of particular interest is that Blum et al employ a relationship between the current demand and the fuel mass flow as a function of time to control and operate the fuel cell system (P. 0045-0046/ FIGURE 3). *Thus, Blum et al specifically use a measured fuel cell operation characteristic to control another respective operation characteristic. That is to say, the another respective operation characteristic is responsive to the measured fuel cell operation characteristic as best understood by the examiner.*

Figure 3 below illustrate the so-called relationship between the current demand and the flow of hydrogen:

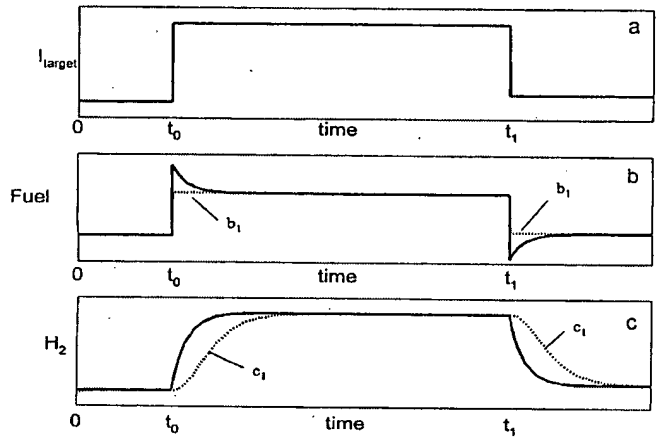


Fig. 3

Examiner's note: *the limitation "adapted to" does not distinguish over prior art because the recitation that an element/feature/member is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform.*

As to claims 2, 7, 12 and 16:

Blum et al control the fuel mass flow in response to the current demand of the system (P. 0045-0046). In this case, the fuel cell peripheral is the reactant supply line, specifically the fuel supply line or oxidant supply line (P. 0028).

With reference to claims 4, 9 and 13:

It is disclosed that the controller controls the system based upon or using measured values or calculated values of the mass flow of the hydrogen rich-gas (P. 0032). Of particular interest is that Blum et al employ a relationship between the current demand and the fuel mass flow as a function of time to control and operate the fuel cell system (P. 0045-0046/ FIGURE 3). *Thus, Blum et al readily envision using stored values as fuel cell operational threshold.*

Thus, the claims are anticipated.

5. Claims 1, 6, 11 and 15 are (*at least*) rejected under 35 U.S.C. 102(b) as being clearly anticipated by Harashima 5290641.

With respect to claims 1, 6, 11 and 15:

Harashima disclose method of controlling operation of fuel cell power supply (TITLE). Essentially, a fuel cell power supply in which the flow rates of reactant gases are set at a flow rates required for a steady state operation plus predetermined extra amounts when an output power increase command is issued (ABSTRACT). Harashima teaches supplying the power of the fuel cell to a load (COL 1, lines 30-32). The control of the entire system is accomplished according to control signals from a control system which receives a command signal that designates an output power of the fuel cell (COL 1, lines 32-35).

Figure 1 depicts a fuel cell system including a fuel cell 1; and control system 5 and reactant supply means peripheral:

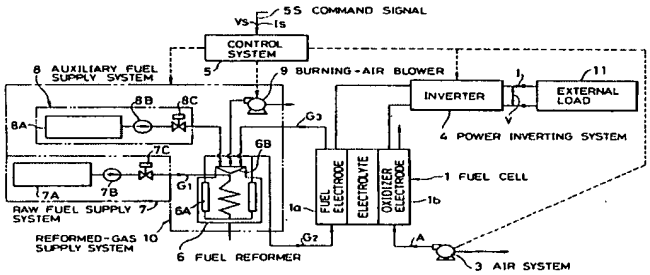


FIG. 1

Additionally, **Figure 6** below is illustrative of the general variable considerations and operational characteristics of the fuel cell employed to control the fuel cell system, particularly, output power, flow rate, output voltage and output current:

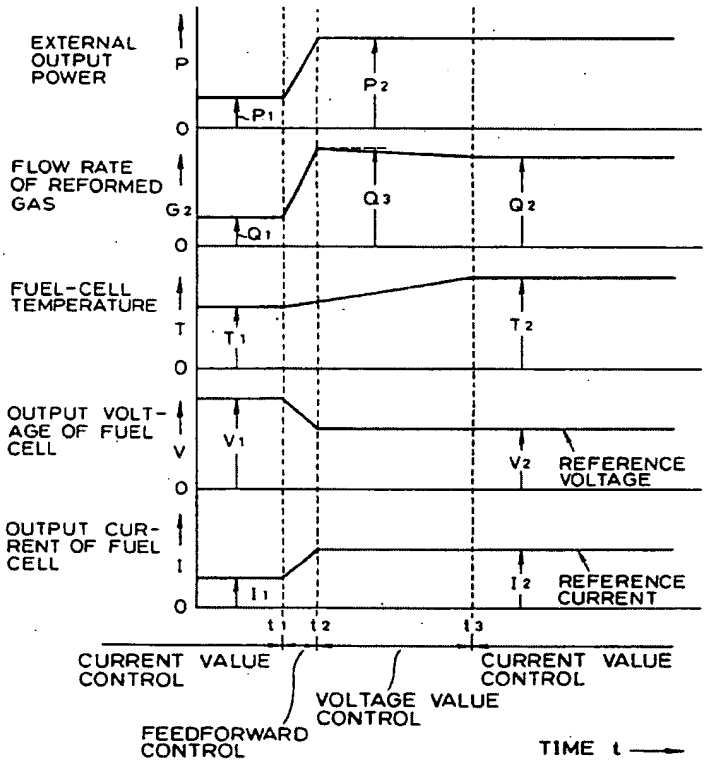


FIG.6

Examiner's note: *the limitation "adapted to" does not distinguish over prior art because the recitation that an element/feature/member is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform.*

Thus, the instant claims are anticipated.

6. Claims 1-2, 4-7 and 9-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Ueda et al 2005/0136311.

Concerning claims 1, 6, 11 and 15-16:

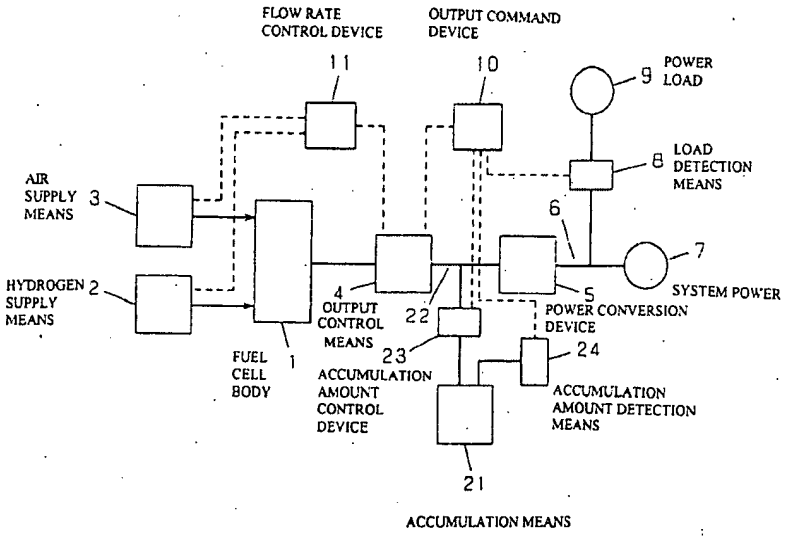
In general, Ueda et al disclose power generation control system and method (TITLE). A fuel cell power generation system including: load detection means of detecting power requested

by a load; and output control means of accumulating a time at which a detected power requested by the load is equal to or larger than a predetermined value when a fuel cell body does not generate power to be supplied to the load, and allowing the fuel cell body to start generating power to be supplied to the load according to a predetermined rule based on an accumulation result (ABSTRACT).

Disclosed is that at an external load command, a power control unit 35 controls a flow rate control unit 36 which controls the flow rate of the hydrogen supply by the hydrogen supply means (*the reactant supply means peripheral*) and the flow rate of the air supply by the air supply means 33 such that the flow rates can be optimum values; and the power converter controls the amount of electricity output by the fuel cell body, thereby successfully controlling the output power (P. 0228; 0002; 0009; 0021-0025). *Thus, Ueda et al show with sufficient specificity to control the flow rate of reactant in response to output power requirements.*

Figure 2 illustrates several features including the output control means; the load; the load detection means; the accumulation amount control device and the like.

Fig. 2



With respect to claims 2, 7, 12 and 16:

Ueda et al teach that at an external load command, a power control unit 35 controls a flow rate control unit 36 which controls the flow rate of the hydrogen supply by the hydrogen supply means (*the reactant supply means peripheral*) and the flow rate of the air supply by the air supply means 33 such that the flow rates can be optimum values; and the power converter controls the amount of electricity output by the fuel cell body, thereby successfully controlling the output power (P. 0228; 0002; 0009; 0021-0025). *Thus, Ueda et al show with sufficient specificity to control the flow rate of reactant in response to output power requirements.*

On the matter of claims 4, 9 and 13:

Ueda et al disclose the employment of output control means of accumulating a time at which a detected power requested by the load is equal to or larger than a predetermined value (ABSTRACT). *In this instant, the predetermined value corresponds to the stored valued in the memory of the control system.*

As far as claims 5, 10 and 14:

The idle level does occur when a fuel cell body does not generate power to be supplied to the load, and allowing the fuel cell body to start generating power to be supplied to the load according to a predetermined rule based on an accumulation result (ABSTRACT).

Thus, the present claims are anticipated.

Response to Arguments

7. Applicant's arguments filed 10/30/06 have been fully considered but they are still unpersuasive.

8. Applicant's amendments to the present claims including the new limitation "*to provide a respective, different and constant operational characteristic...*" add very little to the patentability of the claims because it is believed that the prior art of record meets this limitation. For instance, as previously explained to the applicant (See item 13 below), the prior art of record has been characterized by the examiner as necessarily encompassing at least two (2) or perhaps three (3) different operating modes, each mode requiring a different and constant operational characteristic affecting the operation of the fuel cell system. To be precise, the examiner has explained that any given fuel cell system necessarily exhibits the following modes: a) **first operating mode** being the standard operating mode for power generation and b) **second operating mode** being when the fuel cell is shut-down; c) a **third operating mode** (optional or not necessarily present in all fuel cell systems) may be a fuel cell start-up mode for starting the fuel cell. Very important to recognize is that each of the first and second operating modes mentioned above, or each of the first, second and third operating modes (if the fuel cell is designed to include a start-up operational sequence) has its own "fuel cell operation characteristic". Therefore, discrete levels of operation for fuel cell peripherals corresponding to different operating ranges of the fuel cell system has been taught.

Thus, any fuel cell is necessarily designed to have separate operating characteristics for the power generation mode (the first operating mode) and non-power generation mode [*sic*] (the second operating mode). Therefore, the examiner maintains his position that the prior art of record must have more than range indicative of at least two corresponding ranges of power output. First range being at least the first operating mode under standard operating conditions, and at least a second range being the second operating mode as applicable when the fuel cell is

shutdown. Applicant's invention still reads on the prior art because it neither excludes the shutdown operation, start-up mode operation nor any stand-by operation of the fuel cell system from "*the operation characteristic spectrum divided into at least two ranges indicative of at least two corresponding ranges of power*". Absent any indication of what is specifically meant by fuel cell operation characteristic spectrum from the claim, the examiner notes herein that the prior art of record still satisfies the claimed requirement of providing an operation characteristic spectrum and more than one range indicative of at least more than one power output range.

9. With respect to applicant's arguments that "*there is no relationship between the current demand and the fuel mass flow as a function of time to control and operate the fuel cell system*", the examiner is reproducing hereinafter what the prior art of record does teach: a) "*Of particular interest is that Blum et al employ a relationship between the current demand and the fuel mass flow as a function of time to control and operate the fuel cell system*" (Blum et al at P. 0045-0046/ FIGURE 3); b) disclosed is that at an external load command, a power control unit 35 controls a flow rate control unit 36 which controls the flow rate of the hydrogen supply by the hydrogen supply means (*the reactant supply means peripheral*) and the flow rate of the air supply by the air supply means 33 such that the flow rates can be optimum values; and the power converter controls the amount of electricity output by the fuel cell body, thereby successfully controlling the output power (Ueda et al at P. 0228; 0002; 0009; 0021-0025). *Thus, Ueda et al show with sufficient specificity to control the flow rate of reactant in response to output power requirements.*

10. At the outset, it has been noted that applicant argued the following at page 20, 3rd full paragraph in the 05/19/06 amendment: "*Claim 1 now further specifies that the "fuel cell*

operation characteristic spectrum", previously defined and discussed above, is divided into at least two ranges indicative of at least two corresponding ranges of power output. Thus, in the case of measurement of the fuel cell current, this simply means that the measured current values are divided into two ranges, which typically can be from zero to some mid-point and from that mid-point to a maximum value. Clearly, again for the case of current measurement, these two ranges would each be indicative of separate ranges of power output". Noticeably, this is not recited in the present claims. Simply put, applicant appears to be asserting that the present claims do recite "*the measured current values are divided into two ranges, which typically can be from zero to some mid-point and from that mid-point to a maximum value*" because applicant equates the present claim language to the foregoing phrase. However, it is emphatically noted that those features upon which applicant currently relies are not recited in the rejected claim(s), nor suggested therein. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, applicant's arguments are not commensurate in scope with the present claim language.

11. That being said, let's turn now to briefly address other applicant's arguments. Applicant is of the view that "*none of the prior art is concerned with operating fuel cell peripherals*". In response, the examiner simply states that although all of the prior art references do not focus mostly on operating fuel cell peripherals, namely, their inventive concepts are not centered on specific fuel cell peripherals, there is an inherent degree of controlling the operation of fuel cell peripherals. For example, if the fuel cell is shut down, then fuel cell peripherals will also shut-down. On the other hand, if fuel cell is started, then fuel cell peripherals will also start. Thus,

there is certain degree of operational harmonization between the fuel cell per se and its peripherals so as to obtain a working fuel cell system. In that, the term "*system*" itself does encompass such a degree of harmonized control or coordination. To better visualize this, the examiner respectfully states that applicant's arguments appears to imply, for example (in a similar functional level), that in any given vehicle comprising an internal combustion engine or a diesel engine, if the engine is shut-down, engine peripheral units such as a gasoline pump, water cooling system and the likes will continue to operate. That is to say, the engine is stopped but the gasoline pump continues to pump unnecessary gasoline. That is to say, the engine is stopped but the water cooling system continue to run unnecessarily. That is to say, the engine is stopped but any other peripheral unit remains working unnecessarily. There has to be or there exists an implicit degree of coordination, controlling or harmonization between the engine and such peripheral units. The same applies to fuel cell systems. If applicant is still of the view that this is in no way a reasonable representation of how fuel cells operate, then, the examiner respectfully requests to the applicant to show objective evidence demonstrating that the fuel cell system of the cited references do not have this implicit teaching.

12. In analyzing Blum et al, applicant is also of the view that "*One can note that the fuel cell 3 is shown as having inlets for the reactants, but no outlets, and no concept of recirculation*". While the examiner concedes that "no concept of recirculation" is present in Blum et al, the examiner strenuously contends that having an anode "outlet" or anode exhaust is a conventional structural and functional requirement for the type of fuel cell disclosed by Blum et al. That is to say, the fuel cell unit of Blum et al must include an anode outlet or anode exhaust. There being no outstanding description of fuel cross-over from the anode side to the cathode side of Blum et

al or a total (100 %) consumption of hydrogen reactant in the anode side of Blum et al, there has to be an anode outlet to dispose residual or unused hydrogen. If applicant believes otherwise, the examiner respectfully requests to the applicant to show objective evidence demonstrating that the fuel cell system of Blum et al does not have this implicit teaching.

13. Essentially, applicant has further argued that the prior art references are "*silent on details of the structure of the fuel cell and the nature of fuel cell peripherals*" and/or "*without any realization that operating levels of peripherals can be adjusted to reduce parasitic power loads*" and/or "*silent on the issue of controlling peripheral devices which are not devices concerned with supplying reactants and which can be run at a constant rate*". However, in making that conclusion applicant: a) relies on subject matter or definitions or meanings not currently claimed in the present claims as discussed above (See item 14 above for more information); and b) overlooks the fact that the present claims fail to concretely define "fuel cell operation characteristic spectrum" in a more clearly manner. As a practical matter, one of ordinary skill in the art can immediately recognize that a fuel cell operation must include at least two operating modes (and sometimes at least three operating modes): **first operating mode** being the standard operating mode for power generation and **second operating mode** being when the fuel cell is shut-down; a **third operating mode** (not necessarily present in all fuel cell systems) may be a fuel cell start-up mode for starting the fuel cell. Of significant importance is that each of the first and second operating modes mentioned above, or each of the first, second and third operating modes (if the fuel cell is designed to include a start-up operational sequence) has its own "fuel cell operation characteristic". Thus, any fuel cell is necessarily designed to have separate operating characteristics for the power generation mode (the first operating mode) and non-

power generation mode [*sic*] (the second operating mode). Simply put, each of the foregoing operating modes requires distinct operation characteristics. Therefore, the combination of the first operating mode operation characteristic and the second operating mode operation characteristic and the third operation mode operation characteristics (if present) creates a spectrum of fuel cell operation characteristics which is divided into at least two ranges (or three ranges, if the third operating mode is present) indicative of fuel cell power output ranges. Hence, at least these first and second operating modes (and third operating mode if present) meet the inventive requirement of forming an operation characteristic spectrum. Note that nothing in the present claims stipulates that shut-down (stopping) operation is excluded from the spectrum.

14. With particular respect to Blum et al, it is contended that Blum et al mention $I_{available}$, I_{target} and I_{system}, and also mention the employment of "*proportional controllers*" (←***emphasis supplied***) capable of adjusting fuel cell operational parameters (characteristics) in response to different fuel cell operating states. Consequently, the use of "proportional controllers" in combination with the well known direct relationship between current (I) and voltage (V) (Ohm law) suggests to those of ordinary skill in the art that Blum et al readily envision a spectrum of operational ranges for power output. Moreover, Blum et al specifically mention that "controllers" respond to shut down operation. Hence, in its broadest reasonable interpretation and assuming arguendo that Blum et al fail to teach the inventive fuel cell operation spectrum (a point not conceded by the examiner), it is again contended that the power generation operation characteristic and the shut-down operation characteristic of Blum et al satisfy the presently claimed operation characteristic spectrum. This very same argument is equally applicable to the discussion of Harashima'641 and Ueda et al'311.

15. With respect to Harashima'641, applicant has further argued that "*the prior art has provided inadequate response, with the flow rate of reformed gas overshooting that required, so that the output reference voltage drops excessively and the reference goes too high*". Arguments that the alleged anticipatory prior art teaches away from the invention' or is not recognized as solving the problem solved by the claimed invention, [are] not germane' to a rejection under section 102." Twin Disc, Inc. v. United States, 231 USPQ 417, 424 (Cl. Ct. 1986) (quoting In re Self, 671 F.2d 1344, 213 USPQ 1, 7 (CCPA 1982)). ***See MPEP 2131.05 [R-2] Nonanalogous Art.***

16. In response to applicant's argument that the Harashima reference fails to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "*controlling peripherals that are independent of the load requirement*" and "*no discussion of controlling the flow rates of coolant, various blowers*") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

17. With respect to Ueda et al'311, applicant has also argued that "*Ueda et al are notable for being entire silent on the issue of controlling peripheral devices which are not devices concerned with supplying reactants...*". However, this argument is not well understood because applicant's claims recite that a hydrogen recirculation pump and a hydrogen purging means can be one of the fuel cell peripherals. Clearly, applicant's devices are concerned with supplying reactants in the same manner that Ueda et al's devices are concerned with.

18. With respect to claims 2-3 an d 7-8, applicant has argued that "*The claims have now been amended to remove the control of a reactant supply means as being one of the listed fuel cell peripherals, so that this rejection is no longer applicable*". In response, it is indicated that the present claims still recite "hydrogen purging means", and accordingly, the cited references include anode exhaust or anode outlets for directing unused hydrogen out of the fuel cell unit. Therefore, the cited references certainly encompass "hydrogen purging means". Moreover, all of the three cited references, one way or another, disclose, suggest or teach the importance of maintaining suitable harmonization among all components of a fuel cell system (i.e. fuel cell and its peripheral devices) in order to achieve a satisfactory level of performance based upon synergistic operation and cooperation of each and every single component thereof.

19. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. *This applies to applicant's discussion of claims 4-5 and 9-10.*

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond Alejandro
Primary Examiner
Art Unit 1745